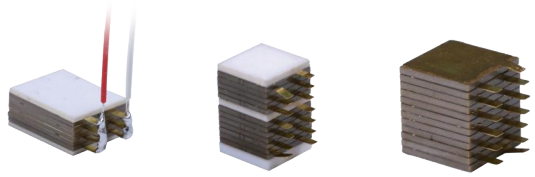
Shear-Type Piezoelectric Ceramic Stack



Feature

- High service life
- Sub-nanometer resolution
- Drive voltage -250V to +250V
- Ceramic packaging to ensure insulation performance
- Suitable for high vacuum environments 10^{-7} Pa
- High Curie temperature of 310°C

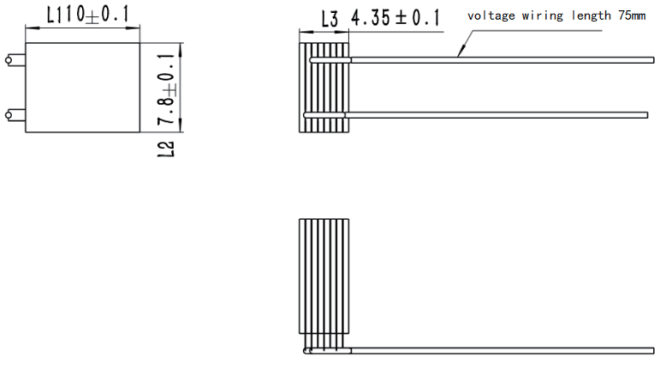
Description

The shear-type piezoelectric ceramic stack is a stacked device composed of multiple piezoelectric ceramic shear plates bonded together. By superimposing the shear displacements of multiple plates, a larger overall displacement is achieved. The shear stack can produce displacement in one-dimensional to three-dimensional XYZ directions, with a maximum displacement of up to 13 μm in a single axis, and the drive voltage of each ceramic layer can be independently controlled.

Applications

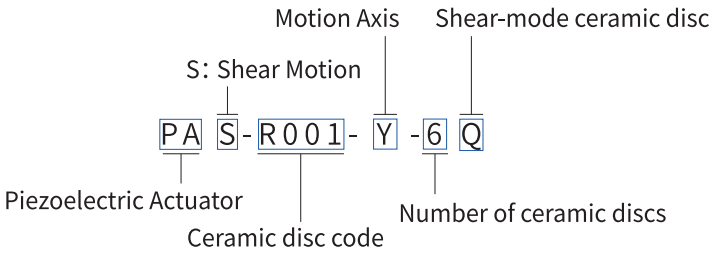
- Scientific research
- Precision optical adjustment equipment
- Industrial automation
- Semiconductor equipment
- Precision motion control
- Precision inspection equipment

Interface Definition



General dimension, Unit: mm

Model Interpretation



Technical Specifications

	PAS-R001-Y-6Q	Unit	Tolerance
Active axes	X/Y		
Electrical properties			
Operating voltage	-250~250	V	
Max. displacement (+250~-250)	13	μm	±15%
Resonant frequency of the longitudinal direction	190	kHz	±20%
Anti-resonant frequency of the longitudinal direction	235	kHz	±20%
Resonant frequency of the thickness direction	580	kHz	±20%
Anti-resonant frequency of the thickness direction	615	kHz	±20%
Electrical capacitance	23	nF	±15%
Operating temperature range	-25~130	°C	
End face electrode material	Gold		
Cable length	75	mm	±5 mm
Curie temperature	280	°C	
Dimensions			
L1	10	mm	±0.1 mm
L2	7.8	mm	±0.1 mm
L3	4.35	mm	±0.1 mm

Customization Information

- **Drive Voltage:** Different drive voltages can meet various displacement requirements. Common standard voltages available include 100V, 150V, and 250V.
- **Output Displacement:** The output displacement is related to the stack height. Depending on different application scenarios, a maximum shear displacement of up to 20μm can be provided.
- **Operating Frequency:** For safe operation, the drive frequency should be kept below 500Hz without preload. With preload applied, the operating frequency can be moderately increased.
- **Dimensions:** In terms of length and width, options such as 4mm, 6mm, 8mm, and 10mm are available. In terms of height, the maximum selection is 15mm.
- **Wiring Harness:** Under the condition of meeting the AWG usage standards, the wiring harness is optional. For convenient connection of the positive and negative electrode wires, the soldering point position can be selected within the allowable error range of performance variation.